Rheumatoid arthritis is a common disease that is now known to progress to irreversible erosive changes in the joints much more quickly than previously recognized. Physicians thus need to identify the early symptoms and signs to make a prompt clinical diagnosis and then start earlier aggressive treatment.

Critical features are morning stiffness and symmetrical inflammation involving usually small joints of the hands and feet. Soft tissue swelling is the most important sign of inflammation and begins most often at the metacarpal phalangeal or proximal interphalangeal joints. Joints are tender and warm but often not hot and red. Elevation of erythrocyte sedimentation rate can help confirm the presence of inflammation but the most important laboratory test is synovial fluid analysis which further confirms inflammation but can also help exclude many of the other potentially confusing causes of arthritis. Rheumatoid factor is present in 75% of patients but can also be seen with some other diseases.

Introduction
Rheumatoid arthritis (RA) is a common disease involving all populations throughout the world with an incidence that approaches 1% in most areas (1). Disease severity varies. There is an impression that the disease may be milder or at least have less extraarticular manifestations in some countries including most less developed countries. Although the etiology is not known, much is known about mechanisms involved. Drug and non-pharmacologic treatments have been developed that affect various of these mechanisms and that can at least slow disease progression and alleviate symptoms although there is no single definitive therapy. Nevertheless, identification of this diagnosis is essential as RA must be distinguished from more serious and even acute life-threatening and systemic diseases (such as septic arthritis and...
systemic lupus erythematosus) that require prompt and different treatments, from diseases such as gout with definitive and very successful therapies, and also from more common problems such as osteoarthritis or fibromyalgia that require less drug therapy and more use of adjunctive physical measures. Early diagnosis is increasingly being emphasized as early treatment is felt to be essential to offer the best chance (2-4) to prevent progressive disabling disease.

RA is most common in women and onset is most frequent between the ages of 25-50. RA also occurs in men and can occur at any age with several studies suggesting even more cases in men over 55. Thus, given the appropriate signs and symptoms RA must also be considered in elderly men or children. RA is defined primarily by its articular features although aggressive and more severe forms of the disease may also have a variety of systemic manifestations. The course of the disease can vary widely. Reasons for this variation are not yet clear. Genetic predispositions are present and unknown triggers are followed by chronic inflammation driven by immune mechanisms.

**Symptoms**

RA most commonly begins gradually with pain, stiffness and then swelling noted first in the small joints of the hand and almost as frequently in the feet. Diagnosis (and treatment) thus is often delayed because of the subtle nature of early symptoms. Fatigue can be common as is stiffness. This stiffness in the morning often takes more than 1 hour before the patient feels limbered up. Patients also often complain of gelling after sitting. Less often the arthritis may start abruptly with dramatic swelling and pain of one or several joints. Fever is not usual although there may be low grade temperature evaluations.

Many joints are usually painful with involvement of both right and left sides. Mono- or oligoarthritis and marked asymmetry should raise consideration of other causes of arthritis. Extraarticular symptoms such as numbness may result from median nerve compression by swollen wrist joints causing the carpal tunnel syndrome or in more severe and chronic disease by vasculitis causing mononeuritis multiplex.

Functional limitation can occur early in severe disease and is a poor prognostic sign (5). Help with managing limitations in activities of daily living must be addressed in therapy along with medication use.

**Signs**

The characteristic objective finding in RA is soft tissue swelling with tenderness at multiple joints generally including the hands and feet. Initial swelling can be subtle, may not bulge obviously and can best be appreciated by palpating each joint individually between your thumb and index finger. Compare carefully with your own or other normal joints. Metacarpal phalangeal (MCP) joints are most often affected (Fig 1). In a normal 2nd MCP joint one can palpate easily into the joint space. The earliest change in RA is filling of this space with soft synovium and/or fluid. Normal joints are often cooler than adjacent tissues; in RA they are warmer but do not expect them to be hot and red as they are affected mainly by cellular proliferation and chronic inflammation more than by the acute dramatic inflammation of gout or infection. Typically wrists, MCPs and proximal interphalangeal joints (PIPs) are involved in the hands while distal interphalangeal joints (DIPs) are relatively spared. Swelling in active RA is soft and not bony like in osteoarthritis (OA). Any joints can be involved. Inability to extend elbows or fully abduct shoulders can occur relatively early. Special attention should be directed to the knees, if involved, as effusions from these joints can most easily be aspirated for diagnostic evaluation of synovial fluid. A variety of scoring systems have been used to quantify severity of joint disease (6). Generally more diffuse involvement is a bad prognostic sign.

Small amounts of synovial fluid can be detected by the “bulge sign”. With the patient supine,
fluid is manually expressed away from the medial side of the joint. The lateral side is then stroked and movement of fluid can be detected as the fluid bulges back into the medial space (Fig. 2). With larger amounts of fluid the patella becomes ballotable and can be tapped against the femoral condyles. This can be most easily done while compressing the fluid downward from the suprapatellar pouch.

RA joint involvement is most often progressive. Migratory arthritis is more typical of gonococcal arthritis, Lyme disease or the now rare rheumatic fever. Usually a diagnosis of RA is not made until objective findings have persisted for 6 weeks because some viral arthritis such as that due to parvovirus B19 can last several weeks and then resolve spontaneously.

In more chronic RA typical deformities can include ulnar deviation of the digits at the MCPs, boutonniere or swan neck deformities (Fig. 3). Subluxation of the thumb MCP can make gripping difficult. RA of the feet can produce bunion-like deformity and cock-up toes.

In highly expressed disease other systemic findings can include firm subcutaneous nodules most often felt over the extensor surface of the ulnae but also occasionally at other sites such as the digits (Fig. 4). Less often there is adenopathy, nail fold infarcts or vasculitic ulcers, pleural or pericardial friction rubs, episcleritis and dry eyes or mouth. A full general examination is important to look for these signs as well as for signs of other systemic diseases such as hepatitis, Lyme disease, psoriasis, systemic lupus, sarcoidosis, etc. that might also cause arthritis. Nonrelated diseases must also be assessed as they or their treatments may affect drugs to be used in treating the RA.

**Laboratory Tests**
Most diagnoses are made by characteristic clinical features and careful evaluation for other systemic diseases (7). Classification criteria promulgated by the American College of Rheumatology (8, 9) principally reflect the clinical features but also include some laboratory and

Fig. 2. The bulge sign may be used to detect the presence of small amounts of fluid in the knee. A) Fluid is expressed away from the medial side of the knee to the lateral side. B) The lateral side is stroked. C) Movement of fluid can be detected as a bulge which appears on the medial side next to the patella.

Fig. 3. Boutonniere and swan neck deformities occurring in adjacent fingers in advanced RA. In the boutonniere deformity the PIP joint protrudes dorsally through the supporting ligaments like a flower through a buttonhole.

Fig. 4. Firm well-circumscribed nodules over the dorsum of the PIPs are rheumatoid nodules. These are to be distinguished from the soft swelling of synovitis.
x-ray features (Table I). Rheumatoid factor (RF), if present in a definitely elevated level, is a sign of more severe disease but some 25% of patients with typical RA may not have RF. Remember that RF can also be seen in SLE, Sjögren’s syndrome, hepatitis, sarcoidosis and chronic infections. Most patients with RA have elevated erythrocyte sedimentation rates or CRP but these are also non-specific.

The single most important laboratory test is probably the analysis of the synovial fluid (SF). Although this cannot definitively diagnose RA it can confirm the presence of an inflammatory process (such as RA but not OA) by revealing 2000 or more leukocytes/mm³. The SF is also critical in excluding crystal-induced diseases (gout or pseudogout) which clinically can mimic RA (10, 11). These latter diseases show characteristic crystals in the SF. SF culture can also exclude the less common, but important to detect, joint infections. Direct studies on the SF or synovial biopsies are being done with a variety of molecular, immunologic and morphologic techniques and seem to offer some of the best hopes for identifying pathogenetic mechanisms that may be amenable to new more effective therapies (12).

X-Rays and Other Imaging

Radiographic studies should add very little in early RA but can help exclude chondrocalcinosis (pseudogout), periostitis seen in less common diseases like reactive arthritis or hypertrophic pulmonary osteoarthropathy, or rarer problems seen with mono or oligoarthritis such as metastases or osteomyelitis. MRI is virtually never needed for diagnosis. After months or years involved joints may show marginal erosions on X-rays (Fig. 5). These are a bad prognostic sign; diagnosis and aggressive treatment should not be delayed until these are found.

References
